NAMRL - 1253

LEVEL

AN EVALUATION OF THE OMNIBUS PERSONALITY

INVENTORY IN THE PREDICTION OF

ATTRITION IN NAVAL AVIATION

TRAINING

Glenn R. Griffin and Julie A. Hopson

November 1978

NAVAL AEROSPACE MEDICAL RESEARCH, LABORATORY

PENSACOLA, FLORIDA.

Approved for public release; distribution unlimited.

79 02 2

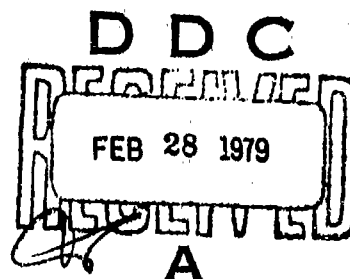# AN EVALUATION OF THE OMNIBUS PERSONALITY INVENTORY IN THE PREDICTION OF ATTRITION IN NAVAL AVIATION TRAINING

Glenn R. Griffin and Julie A. Hopson

NAMRL-1253

Approved by

Ashton Graybiel, M. D.
Assistant for Scientific Programs

Released by

Captain R. E. Mitchel, MC, USN
Commanding Officer

Interim rept.,

November 1978

SUMMARY PAGE

THE PROBLEM

The numerous Navy research efforts to identify motivational predictors of student naval aviator and/or student naval flight officer attrition have met with little success. In spite of the failures associated with the application of personality or motivational measures to naval aviation populations, there is little doubt that much of the attrition in naval aviation training is of a motivational origin. As a result, research personnel continue to seek motivational measures that may identify those individuals most likely to succeed in training. The present report describes an evaluation of the Omnibus Personality Inventory (OPI) as a predictor of student motivational attrition in naval aviation training.

FINDINGS

Initial validation results suggested that certain OPI scales were predictive of student naval aviator and student naval flight officer success in naval flight training programs. A cross-validation analysis was conducted to determine the stability of these findings. The analysis indicated that significant cross-validity relationships existed for current selection tests but not for OPI predictor measures.

RECOMMENDATIONS

It must be concluded that the OPI is not sufficiently related to student naval aviation training performance to be of value in the prediction of aviator motivational attrition. These results support previous conclusions that future aviation selection research should be directed toward the identification of performance oriented, non-paper-and-pencil measures as motivational predictors.

ACKNOWLEDGMENTS

ii

INTRODUCTION

Psychological research personnel at the Naval Aerospace Medical Research Laboratory (NAMRL) are continually evaluating methods to reduce attrition in the naval aviation training program. In an effort to find early, cost-saving predictors of attrition, motivational and cognitive paper-and-pencil measures have been extensively explored. It is generally conceded that cognitive predictors are well represented in the Navy aviation selection program and that they, along with stringent educational standards, are a primary reason for the low incidence of academic attrition. Unfortunately, as reported by Griffin and Mosko (5) and by North and Griffin (10), research efforts to identify motivational predictors have met with little success. However, there is little doubt that a large proportion of naval aviation attrition can be attributed to motivational factors. As a result, research personnel continue to seek noncognitive measures that may be predictive of training success.

Identification of motivational factors appears to be primarily a problem of assessment. Most paper-and-pencil instruments used in the past were developed for use as a diagnostic aid with heterogeneous groups. Such tests have not been beneficial in the search for valid motivational predictors of training outcome in naval aviation training. The naval aviation trainee population is a unique, homogeneous group who have met high educational standards and possess the ability to successfully complete training. Therefore, instruments that have more direct applicability to this population should be advantageous in the search for motivational predictors.

McReynolds (9) indicated that the Omnibus Personality Inventory (OPI), a multiscale, self-administering inventory, was constructed for research on problems concerning adaptation of young people to a college environment. A particularly strong feature of the OPI is the emphasis on intrinsic motivational factors as differentiated from extrinsic factors in learning. Since the inventory was developed on a college age population, some comparable facets seemed related to students in naval flight training. Navy aviation trainees, like college students, are young adults in a new learning situation where certain attitudes, values, interests, and adaptability are important factors for success.

The OPI has been utilized for assessing differences among various subject groups in a university setting. Rossman and Kirk (13) compared OPI scale differences among students who were classified as successful, voluntary withdrawals, or failures. In their study, OPI differences were used to describe personality factors that were believed to contribute to the attrition of college students.

Other descriptive comparisons of college students have been conducted with use of the OPI. For example, Gall (4) compared male and female OPI performance and its relationship to manifest anxiety. Elton (2) used the OPI to evaluate personality change as a function of time in a college environment.

Chickering, McDowell, and Campagna (1) studied personality as a function of college attended. Rose and Elton (11), and Rossman and Kirk (12) evaluated the OPI performance of students who accepted or rejected academic counseling. Whittaker and Watts (16) utilized the OPI to compare University of California, Berkeley, students with a nonstudent fringe group. Kirk and Sereda (7) utilized the OPI to evaluate students who accurately or erroneously reported college grade average. Smith and Winterbottom (14) evaluated the personality characteristics of college students on academic probation, using the OPI.

Some studies have shown the OPI to be beneficial in predicting educational performance. Weissman (15) utilized the OPI Intellectual Disposition Composite (IDC) score as criterion in an analysis of the contribution of background factors to intellectual behavior. Weissman's results indicated that the father's educational background was significantly related to the IDC measure. MacMillan (8) attempted to find predictors of early college student attrition, using OPI scale scores and individual background characteristics. The OPI Thinking Introversion score was shown to be significantly related to successful completion of at least two years of college. Follett (3) employed the OPI to predict student performance in the naval flight officer advanced radar intercept training program. The OPI Thinking Introversion score, the OPI Masculinity/Femininity score, three training flight grade scores, and U. S. Naval and Marine Aviation Selection Test scores resulted in a multiple regression correlation coefficient of .665, shrinking to .52 in a cross-validation procedure. That study was oriented toward the prediction of academic failure. As a result, students who attrited for motivational reasons were excluded from the analysis.

The above findings indicated that the OPI might have potential as a predictor of performance within the naval aviation population. As a result, it was decided to expand upon Follett's effort and evaluate the OPI on a more representative naval aviation population that would include students from the various training programs and would consider different categories of attrition. The present report contains the results of that effort.

PROCEDURE

SUBJECTS

The student population consisted of Navy and Marine flight students who entered training at the Naval Aviation Schools Command, Pensacola, Florida, between January and October of 1973. Each student was categorized according to type of training and procurement source. The total sample of 1,108 students was made up of the following:

1. Student naval aviators, aviation officer candidates (SNA/AOC); n = 171.

2. Student naval aviators, officers under instruction (SNA/OI); n = 548.

2

3. Student naval flight officers, aviation officer candidates (SNFO/AOC); n = 238.

4. Student naval flight officers, officers under instruction (SNFO/OI); n = 151.

AOCs are recent college graduates procured from the civilian community. OIs are recent graduates from both college and an officer training program such as NROTC or the U. S. Naval Academy. All subjects represented a homogeneous population with respect to age, physical characteristics, intelligence, and education.

OMNIBUS PERSONALITY INVENTORY

The OPI, a self-administering, paper-and-pencil test instrument, was developed for research purposes. The latest edition of the test (Form F) consists of 385 true/false items that yield fifteen subscores of scales. Heist and Yonge (6) have provided descriptions of the 15 subscales. Scale descriptions are contained in Table I.

METHOD

The OPI was routinely administered to SNAs and SNFOs during the first or second week of training. The subject completed the OPI in a group classroom setting within the NAMRL facility. No time limit was imposed for completing the OPI inventory.

For each student, U. S. Naval and Marine Aviation Selection Battery scores were obtained. The Battery consists of the Aviation Qualification Test (AQT), Mechanical Comprehension Test (MCT), Spatial Apperception Test (SAT), and the Biographical Inventory (BI). All students initially qualified on these tests before receiving orders to flight training.

Two years were required for the students to complete the required training programs. After the data matured, five dichotomous training criteria were identified for data analysis. The criteria are identified as follows:

1. Completion vs. DOR or voluntary withdrawal (Pass/DOR). A DOR (Drop on Request) is a motivational category of attrition that normally occurs after the student receives his commission.

2. Completion vs. DOA (Pass/DOA). DOA (Drop on Arrival) is a type of voluntary withdrawal that occurs during the first twelve weeks of school in Naval Aviation Schools Command.

3. Completion vs. a combination of DOR and DOA attrition categories (Pass/DOA, DOR).

3

Table I

OPI Scales*

1. Thinking Introversion (TI)--43 items: Persons scoring high on this measure are characterized by a liking for reflective thought and academic activities.

2. Theoretical Orientation (TO)--33 items: High scorers are generally logical, analytical, and critical in their approach to problems and situations.

3. Estheticism (Es)--24 items: High scorers endorse statements indicating diverse interests in artistic matters and activities.

4. Complexity (Co)--32 items: High scorers are tolerant of ambiguities and uncertainties; they are fond of novel situations and ideas.

5. Autonomy (Au)--43 items: High scorers show a tendency to be independent of authority as traditionally imposed through social institutions.

6. Religious Orientation (RO)--26 items: High scorers are skeptical of conventional religious beliefs and practices and tend to reject most of them.

7. Social Extroversion (SE)--40 items: High scorers display a strong interest in being with people, and they seek social activities and gain satisfaction from them.

8. Impulse Expression (IE)--59 items: High scorers have an active imagination, value sensual reactions and feelings; very high scorers have frequent feelings of rebellion and aggression.

9. Personal Integration (PI)--55 items: The high scorer admits to few attitudes and behaviors that characterize socially alienated or emotionally disturbed persons.

10. Anxiety Level (AL)--20 items: High scorers deny that they have feelings or symptoms of anxiety, and do not admit to being nervous or worried. A high score indicates a low anxiety level.

11. Altruism (Am)--36 items: The high scorer is trusting and ethical in his relations with others. He has a strong concern for the feelings and welfare of people he meets.

12. Practical Outlook (PO)--30 items: The high scorer on this measure is interested in practical, applied activities and tends to value material possessions and concrete accomplishments.

13. Masculinity-Femininity (MF)--56 items: This scale assesses some of the differences in attitudes and interests between college men and women. High scorers (masculine); low scorers (feminine).

14. Response Bias (RB)--28 items. High scorers are responding in a manner similar to a group of students who were explicitly asked to make a good impression by their responses to these items.

15. Intellectual Disposition Category (IDC)--Based on Scales TI, TO, Es, Co, Au and RO. Essentially, the IDC is a measure of intellectual interest or behavior.

* From reference (6).

4

4. Completion vs. attrition due to failure in academic or flight portions
    of the naval aviation training program (Pass/Flight or Academic
    Failure.)

5. Completion vs. all attrition groups mentioned above (Pass/Fail).

A series of multiple regression analyses was performed for each sample,
using a forward selection procedure. The selection test scores were forced into
the equation first, with the remaining OPI scale scores subject to statistical selec-
tion. The purpose of this procedure was to establish if any new predictor var-
iables accounted for additional, unique variance beyond that provided by the
selection test battery. Weight reversals were suppressed so that a variable was
eliminated if the sign of its beta weight did not coincide with the sign of its zero-
order correlation. Variables with an F-ratio less than one were excluded from
consideration.

RESULTS AND DISCUSSION

Tables II through V depict the obtained zero-order correlation, the multiple
regression R, $\underline{R}2$, and the step increase in $\underline{R}$ for the U. S. Naval and Marine
Aviation Selection and OPI test variables. The zero-order correlations indicated
a low relationship of the U. S. Naval and Marine Aviation Selection test scores
to the various criteria. These relationships were based on trainees who had
met the screening requirements and had received high scores on the Naval
Aviation Test Battery. The correlations would have been substantially higher
if the selection test variables had been applied to an unselected population.

Table II presents the results for the SNA/AOC sample. As indicated, 4.8
percent to 7.0 percent of the variance could be explained by the selection test
scores for the Pass/Fail, Pass/DOR-DOA, and Pass/DOR criterion groups. The
introduction of the OPI Thinking Orientation (TO) scale increased the explained
variance for these criterion groups to 8.0 percent through 11.2 percent, a fairly
substantial amount. For the Pass/DOA criterion, the selection test scores
accounted for 9.9 percent of the variance. Anxiety Level (AL) and TO scales
increased the explained variance to 11.6 percent. For the Pass/Flight or Aca-
demic Failure group, the selection test scores accounted for 2.9 percent of the
variance. The inclusion of the Practical Outlook (PO) scale to the equation
increased the explained variance to 7.1 percent. The final equations yielded
multiple $\underline{R}$s of .267 to .340.

Table III presents the results for the SNA/OI sample. The Pass/DOA and
Pass/Flight or Academic Failure criteria were excluded since the number of
attritions in these groups was small, less than 8 percent of the group sample.
For the other criteria, the selection test scores explained 3.4 percent to 4.3 per-
cent of the variance. When the IDC and AL scores were added to the equation,
the explained variance increased to 4.7 percent through 6.7 percent. The final
equations yielded multiple $\underline{R}$s of .215 to .259.

5

Table II

Summary of Initial Validation Regression Analysis
For the SNA/AOC Sample

Criterion	Variables	Zero Order r	Multiple R	R2	Increase in R
Pass/Fail	AQT	.053	.053	.003	.053
(48% attrition)	MCT	.055	.066	.004	.014
	SAT	.179*	.182	.033	.116
	BI	.119	.219	.048	.037
	TO	.166*	.283*	.080	.064
Pass/DOR-DOA	AQT	.048	.048	.002	.048
(41% attrition)	MCT	.105	.106	.011	.058
	SAT	.196*	.204	.042	.099
	BI	.173*	.264	.070	.060
	TO	.195*	.335**	.112	.071
Pass/DOR	AQT	.020	.020	.001	.020
(35% attrition)	MCT	.051	.051	.003	.031
	SAT	.191*	.191	.037	.140
	BI	.158	.250	.063	.059
	TO	.175	.318*	.101	.067
Pass/DOA	AQT	.082	.082	.007	.082
(22% attrition)	MCT	.165	.167	.023	.085
	SAT	.170	.209	.043	.042
	BI	.146	.243	.059	.034
	AL	.220*	.314	.099	.071
	TO	.188	.340*	.116	.026
Pass/Flight or	AOT	.058	.058	.003	.058
Academic	MCT	-.063	.103	.011	.045
Failure	SAT	.123	.169	.029	.067
(24% attrition)	BI	-.011	.170	.029	.000
	PO	-.187	.267	.071	.098

** Significant at 01 level of confidence.
 * Significant at 05 level of confidence.

Table III

Summary of Initial Validation Regression Analysis
For the SNA/OI Sample

Criterion	Variables	Zero Order r	Multiple R	R^2	Increase in R
Pass/Fail	AQT	.129**	.129	.017	.129
(25% attrition)	MCT	.196**	.198	.039	.069
	SAT	.053	.198	.039	.000
	BI	.099*	.206	.043	.008
	IDC	.096*	.242	.059	.036
	AL	.111**	.259**	.067	.018
Pass/DOR-DOA	AQT	.043	.043	.002	.043
(20% attrition)	MCT	.122**	.124	.015	.081
	SAT	.007	.126	.016	.002
	BI	.096*	.144	.021	.018
	AL	.134**	.185	.034	.041
	IDC	.098*	.219**	.048	.034
Pass/DOR	AQT	.064	.064	.004	.064
(19% attrition)	MCT	.123**	.123	.015	.058
	SAT	.021	.123	.015	.000
	BI	.106*	.147	.022	.024
	IDC	.096*	.187	.035	.041
	AL	.123**	.215**	.047	.028

**- Significant at 01 level of confidence.
 * Significant at 05 level of confidence.

Table IV

Summary of Initial Validation Regression Analysis For the SNFO/AOC Sample

Criterion	Variables	Zero Order r	Multiple R	R^2	Increase in R
Pass/Fail	AQT	.152*	.152	.023	.152
(53% attrition)	MCT	.232**	.238	.057	.087
	SAT	.154*	.244	.060	.008
	BI	.193*	.252	.064	.008
	PI	.146*	.278**	.078	.026
Pass/DOR-DOA	AQT	.130	.130	.012	.130
(47% attrition)	MCT	.226**	.299	.052	.099
	SAT	.156*	.237	.056	.006
	BI	.202**	.251	.063	.013
	PI	.144*	.274**	.074	.024
Pass/DOR	AQT	.277**	.227	.052	.227
(28% attrition)	MCT	.280**	.301	.091	.074
	SAT	.176*	.315	.099	.305
	BI	.253**	.316	.100	.011
	PI	.180*	.348**	.121	.033
Pass/DOA	AQT	.029	.029	.001	.029
(33% attrition)	MCT	.148	.152	.023	.123
	SAT	.118	.169	.029	.018
	BI	.131	.179	.032	.010
	SE	.101	.208	.043	.029
Pass/Flight or	AQT	.179*	.179	.032	.179
Academic	MCT	.202*	.227*	.052	.048
Failure	SAT	.120	.229	.053	.002
(19% attrition)	BI	.123	.229	.053	.000
	PI	.127	.252	.064	.023

** Significant at 01 level of confidence.
 * Significant at 05 level of confidence.

8

Table V

Summary of Initial Validation Regression Analysis
For the SNFO/OI Sample

Criterion	Variables	Zero Order r	Multiple R	R^2	Increase in R
Pass/Fail	AQT	.381**	.381	.145	.381
(21% attrition)	MCT	.317**	.408	.167	.027
	SAT	.179*	.408	.167	.000
	BI	.232**	.424	.180	.016
	PO	.164*	.477**	.227	.052
Pass/DOR-DOA	AQT	.264**	.264	.070	.264
(11% attrition)	MCT	.234**	.293	.086	.029
	SAT	.088	.295	.087	.002
	BI	.175*	.314	.098	.019
	PO	.240**	.417**	.174	.104
Pass/Flight or	AQT	.342**	.342	.117	.342
Academic	MCT	.274**	.363	.132	.021
Failure	SAT	.189*	.364	.133	.002
(13% attrition)	BI	.186*	.374**	.140	.010

** Significant at 01 level of confidence.
 * Significant at 05 level of confidence.

Table IV presents the results for the SNFO/AOC sample. The selection test scores accounted for 3.2 percent to 10.0 percent of the variance. When the Personal Integration (PI) scale was introduced, the explained variance for four criterion groups was increased to 6.4 percent through 12.1 percent. For the Pass/ DOA category, the Social Extraversion (SE) scale was introduced into the equation, increasing the explained variance from 3.2 percent to 4.3 percent. It should be noted that the SE scale is substantially related to the PI scale, $r = .36$. The final equations yielded multiple Rs of .208 to .348.

Table V presents the results for the SNFO/OI sample. As indicated, 9.8 percent to 18.0 percent of the variance could be explained by the selection test scores for three of the criterion groups. The Pass/DOA and Pass/DOR groups were dropped from the analysis since the number of attrited students was small, less than 2 percent and 9 percent, respectively. The introduction of the Practical Outlook (PO) scale increased the explained variance by 7.6 percent and 4.7 percent, respectively, for the Pass/DOR-DOA and Pass/Fail criterion groups. No OPI scale score was related to the Pass/Flight or Academic Failure criterion.

9

The results suggested that the TO, IDC, AL, PI, and PO OPI scale scores were useful in accounting for additional variance beyond that provided by selection test predictors currently in use. Of the scales that did significantly improve the existing predictive capability, there was a 3.0 percent average increase in explained variance, which was statistically significant.

An examination of the motivational attrition criteria (DOR, DOA, and DOR-DOA) indicates that different OPI predictors were related to the four student types. For the SNA/AOC motivational related criteria, the TO scale was the most important variable. Both the TO and AL scales added to the explained variance for the Pass/DOR group. For the SNA/OI group, the IDC and AL scales were related to motivational attrition. The PI and SE scales were related to the motivational attrition of the SNFO/AOC group. These two scales are substantially correlated, and when the DOR and DOA groups are combined, the PI scale is the predictive variable. The only OPI predictor related to motivational attrition for the SNFO/OI group was the PO scale.

It is not surprising to find unique OPI variables for the different student types. Previous research efforts have shown that these groups have differing characteristics. Since motivation is considered a multi-dimensional construct, it is probable that no one predictor variable will be applicable to all student types.

CROSS-VALIDATION

Past research has indicated that motivational predictors often do not maintain their relationship when applied to a second sample. Therefore, a cross-validation study was conducted in order to test the validity of the initial results. All treatment aspects of the initial validation study were maintained except for the subject population.

The cross-validation sample consisted of Navy and Marine flight students who entered training at the Naval Aviation Schools Command, Pensacola, Florida, between January 1975 and February 1976. The total sample of 925 trainees was subdivided into the following categories:

1. SNA/AOC; n = 239.

2. SNA/OI; n = 264.

3. SNFO/AOC; n = 194.

4. SNFO/OI; n = 228.

The variable weights derived from the initial validation analysis for the Pass/Fail criterion group were applied to the cross-validation subject population. Pass/Fail regression weights were used, since that group contained all

10

the subjects, and the regression analysis for the second largest attrition group (DOR/DOA) indicated that the same OPI scale contributed important variance. The one exception was the SNA/OI sample. In the SNA/OI sample, the primary OPI factor for the Pass/Fail criterion was the IOC score, and the AL score was the primary OPI factor weight for the Pass/DOR-DOA criterion. The weights for the Pass/DOR-DOA equation were utilized because the IDC score is a composite score based on five OPI scales. Since the AL scale did enter the equation in each of the three criteria used with the SNA/OI sample, it was decided that the more homogeneous AL scale would be more practical for inclusion in a selection test battery than the lengthy IDC multi-scale variable.

Table VI presents the results of the cross-validation effort for each student category. As indicated in Table VI, each of the prediction equations cross-validated at a statistically significant level on the new samples.

Table VI

Cross-Validation Correlational Relationship

Subject Population	SNA-OI	SNA-AOC	SNFO-OI	SNFO-AOC
Cross-Validation Correlation Coefficient	.138**	.121*	.128*	.156**

** Significant at 01 level of confidence.
 * Significant at 05 level of confidence.

In order to determine which predictor variables were responsible for the significant cross-validation correlation coefficient, multiple regression analyses were performed on the cross-validation population. All scores used for the cross-validation were forced into the equation in the following order: AQT, MCT, SAT, BI, and OPI score. The criterion consisted of the Pass/Fail category.

Table VII depicts the results of the regression analyses performed on the cross-validation population. As indicated in Table VII, the predictive validity of the OPI scores became nil for the second population. The U.S. Naval and Marine Aviation Selection Test scores explained 4.8 percent to 6.0 percent of the variance for the student types; whereas, the OPI scale score accounted for a maximum of 0.5 percent additional variance. No discernible differences were noted in the mean scores for each OPI scale between the two populations. The results indicate that the significant cross-validation coefficient was due to selection test scores rather than to OPI predictor variables.

11

Table VII

Cross-Validation Population Regression Analysis

Criterion: Pass/Fail	Variables	Zero Order r	Multiple R	R2	Increase in R
SNA/AOC	AQT	-.091	.091	.008	.091
(33% attrition)	MCT	-.106*	.123	.015	.032
	SAT	.130**	.192	.037	.069
	BI	.074	.218	.048	.026
	TO	.004	.220*	.048	.002
SNA/OI	AQT	.072	.072	.005	.072
(25% attrition)	MCT	.080	.089	.008	.017
	SAT	.046	.091	.008	.002
	BI	.225**	.232	.054	.141
	AL	.066	.237*	.056	.005
SNFO/AOC	AQT	.182**	.182	.033	.182
(50% attrition)	MCT	.114	.186	.035	.004
	SAT	.198**	.236	.056	.050
	BI	.112	.245	.060	.009
	PI	-.046	.248*	.062	.003
SNFO/OI	AQT	.176**	.178	.031	.176
(21% attrition)	MCT	.050	.178	.032	.002
	SAT	.103	.190	.036	.012
	BI	.125*	.216*	.047	.026
	PO	-.083	.219	.048	.003

** Significant at 01 level of confidence.
 * Significant at 05 level of confidence.

Some fluctuation of the selection tests to the criterion between the two populations is reflected in the zero-order correlation. It is hypothesized that this is due partly to sample size and partly to changes in the requirements for entry into the naval aviation flight training program. As can be noted in Table VIII, the selection test scores for the aviation officer candidates were substantially higher in the second sample, while the test scores for the officers under instruction were lower. Although there is variability in these scores, the explained variance between the two samples remained relatively constant.

Table VIII

Mean and Standard Deviation of Initial Validation (IV) and Cross-Validation (CV) Populations on Selected Variables

SNA/AOC

	AQT		MCT		SAT		BI		TO	
	M	SD	M	SD	M	SD	M	SD	M	SD
IV	66.23	12.45	51.11	8.77	19.63	5.78	34.54	11.13	49.33	10.08
CV	69.23	11.03	54.84	7.62	23.14	3.98	46.74	10.41	50.00	10.00

SNA/OI

	AQT		MCT		SAT		BI		AL	
	M	SD	M	SD	M	SD	M	SD	M	SD
IV	77.65	15.51	54.65	9.69	21.10	5.38	36.86	11.18	51.12	8.43
CV	68.13	10.47	50.62	9.38	21.36	5.38	37.96	10.54	50.00	10.01

SNFO/AOC

	AQT		MCT		SAT		BI		PI	
	M	SD	M	SD	M	SD	M	SD	M	SD
IV	66.32	12.88	46.14	10.45	17.24	6.46	29.25	12.28	48.31	15.30
CV	69.73	10.37	49.26	8.95	21.27	4.96	25.39	9.94	50.00	10.00

SNFO/OI

	AQT		MCT		SAT		BI		PO	
	M	SD	M	SD	M	SD	M	SD	M	SD
IV	76.13	15.86	53.14	10.18	20.54	6.00	34.60	12.04	49.62	12.30
CV	69.42	12.43	51.28	9.58	19.59	5.94	37.09	11.57	49.99	10.00

CONCLUSIONS

Although initial validation results indicated that certain OPI scales might be predictive of attrition in the naval aviation training program, the cross-validation study showed that the relationship was due to chance variance. The application of regression weights to a second population resulted in a significant cross-validation correlation coefficient for each subsample. However, multiple regression analyses performed on the cross-validation population indicated that the effect was due, then, to current selection tests rather than to the OPI measures. Therefore, it must be concluded that the Omnibus Personality Inventory is not sufficiently related to naval training success to be of value in the prediction of aviator motivational attrition. These results show the importance of going beyond the cross-validation correlation coefficient in the interpretation of variable significance. When numerous prediction variables are being evaluated, a significant cross-validation result may be due to a subset, rather than to all predictor variables. For example, in this study, the U. S. Naval and Marine Aviation Selection Test scores, which are known predictors, were responsible for the significant effect.

Although the Omnibus Personality Inventory was developed for use with a similar population, the instrument was ineffective in identifying any type of attrition in naval aviation training. These results lend support to the conclusion of Griffin and Mosko (5) and of North and Griffin (10) concerning the application of paper-and-pencil personality measures to naval aviation training populations. These authors, upon reviewing the frequent attempts to utilize paper-and-pencil personality measures as predictors of motivational attrition, conclude that future research should be directed toward the identification of non-paper-and-pencil performance measures for use in the improved prediction of performance in student aviation training and in operational flying environments.

REFERENCES

1. Chickering, A. W., McDowell, J., and Campagna, D., Institutional differences and student development. J. Ed. Psychol., 60(4): 315-326, 1969.

2. Elton, C. F., Patterns of change in personality test scores. J. Counsel. Psychol., 16(2): 95-99, 1969.

3. Follett, S. C., Predicting performance in advanced radar intercept officer (RIO) training. Masters thesis. Monterey, Calif.: Naval Postgraduate School, March 1976.

4. Gall, M. D., The relationship between masculinity-femininity and manifest anxiety. J. Clin. Psychol., 25(3): 204-205, 1960.

5. Griffin, G. R., and Mosko, J. D., A review of naval aviation attrition research 1950-1976: A base for the development of future research and evaluation. NAMRL-1237. Pensacola, Fla.: Naval Aerospace Medical Research Laboratory, 1977.

6. Heist, P., and Yonge, G., Omnibus Personality Inventory Manual Form F. The Psychological Corporation, New York, N.Y., 1969.

7. Kirk, B. A., and Sereda, L., Accuracy of self reported college grade averages and characteristics of non- and discrepant reporters. Ed. Psychol. Measure, 29(1): 147-155, 1969.

8. MacMillan, T. F., Establishing a predictive model for early recognition of potential community college student attrition. Doctors thesis. Berkeley, Calif.: University of California, 1969.

9. McReynolds, P., Omnibus Personality Inventory. In Buros, O. K. (Ed.): The Seventh Mental Measurements Yearbook. Highland Park, N.J.: Gryphon Press, 1972. pp. 280-282.

10. North, R. A., and Griffin, G. R., Aviator Selection 1919-1977. NAMRL SR 77-2. Pensacola, Florida, Naval Aerospace Medical Research Laboratory, 1977.

11. Rose, H. A., and Elton, C. F., Accepters and rejectors of counseling. J. Counsel. Psychol., 15(6): 578-580, 1968.

12. Rossman, J. E., and Kirk, B. A., Comparison of counseling seekers and non-seekers. J. Counsel. Psychol., 17(2): 184-188, 1970.

13. Rossman, J. E., and Kirk, B. A., Factors related to persistence and withdrawal among university students. J. Counsel. Psychol., 17(1): 56-62, 1970.

14. Smith, C. P., and Winterbottom, M. T., Personality characteristics of college students on academic probation. J. of Personality, 38(3): 379-391, 1970.

15. Weissman, H. N., Disposition toward intellectuality: Its composition and assessment. J. Gen. Psychol., 82(1): 99-107, 1970.

16. Whittaker, D., and Watts, W. A., Personality characteristics of non-conformist youth subculture. A study of the Berkeley non-student. J. of Social Issues, 25(2): 65-89, 1969.

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER NAMRL - 1253	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) An Evaluation of the Omnibus Personality Inventory in the Prediction of Attrition in Naval Aviation Training		5. TYPE OF REPORT & PERIOD COVERED Interim
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Glenn R. Griffin and Julie A. Hopson		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Naval Aerospace Medical Research Laboratory Naval Air Station Pensacola, Florida 32508		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS ZF51.524.002-5013
11. CONTROLLING OFFICE NAME AND ADDRESS Naval Medical Research and Development Command National Naval Medical Center Bethesda, Maryland 20014.		12. REPORT DATE November 1978
		13. NUMBER OF PAGES Eighteen (18) pages
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Motivational Predictors
Attrition
Omnibus Personality Inventory (OPI)

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)
    The numerous Navy research efforts to identify motivational predictors of student naval aviator and/or student naval flight officer attrition have met with little success. In spite of the failures associated with the application of personality or motivational measures to naval aviation populations, there is little doubt that much of the attrition in naval aviation training is of a motivational orign. As a result, research personnel continue to seek motivational measures that may identify those individuals most likely to succeed in training. The present report describes an evaluation of the Omnibus Personality Inventory (OPI) as a predictor of student motivational attrition in naval aviator flying training.   ⟶ (over)

DD FORM 1473 EDITION OF 1 NOV 65 IS OBSOLETE
1 JAN 73
S/N 0102-014-6601

20.

Initial validation results suggested that certain OPI scales were predictive of student naval aviator and student naval flight officer success in naval flying training programs. A cross-validation analysis was conducted to determine the stability of these findings. The analysis indicated that significant cross-validity relationships existed for current selection tests but not for OPI predictor measures.

It must be concluded that the OPI is not sufficiently related to student naval aviator training performance to be of value in the prediction of aviator motivational attrition. These results support previous conclusions that future aviation selection research should be directed toward the identification of performance oriented, non-paper-and-pencil measures as motivational predictors.